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United States Patent [19][11] **Patent Number:** **6,002,507****Floyd et al.**[45] **Date of Patent:** **Dec. 14, 1999****[54] METHOD AND APPARATUS FOR AN INTEGRATED LASER BEAM SCANNER**

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[58] **Field of Search** 359/198, 201, 359/202, 212, 213, 214, 220, 221, 223, 224, 225; 250/230, 234

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[57] ABSTRACT

A solid state laser beam scanning system having a single crystal silicon deflection and scanning mirror integrated with a laser diode. By combining the techniques of deep reactive ion etching of silicon with solder bump bonding techniques, completed and tested laser diodes are integrated with silicon substrates supporting micro-electro-mechanical systems layers.

20 Claims, 11 Drawing Sheets